Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in the application.

Claim 1 (currently amended): An acoustic synthesis and spatialization method, in which a synthetic sound to be generated is characterized by the nature of a virtual acoustic source and its position relative to a chosen origin,

~~characterized in that~~ wherein the method comprises a joint step ~~consisting in~~ of determining parameters including at least one gain, for defining, at the same time:
- a loudness characterizing the nature of the source, and
- the position of the source relative to a predetermined origin.

Claim 2 (currently amended): The method as claimed in claim 1, in which the spatialization of the virtual source is performed in an ambisonic context, ~~characterized in that it comprises~~ further comprising a step for calculating gains associated with ambisonic components in a spherical harmonics base.

Claim 3 (currently amended): The method as claimed in claim 1, in which the synthetic sound is intended to be reproduced in a holophonic, or binaural, or transaural context, on a plurality of reproduction channels,

~~characterized in that~~ wherein, during said joint step, a delay between reproduction channels is also determined, to define at the same time:
- a triggering instant of the sound characterizing the nature of the source, and
- the position of the source relative to a predetermined origin.

Claim 4 (currently amended): The method as claimed in claim 3, ~~characterized in that~~ wherein the nature of the virtual source is parameterized at least by a temporal loudness variation, over a chosen duration and including a sound triggering instant.

Claim 5 (currently amended): The method as claimed in claim 4, ~~characterized in that~~ wherein said variation comprises at least:

- an instrumental attack phase,

- a decay phase,

- a sustain phase, and

- a release phase.

Claim 6 (currently amended): The method as claimed in ~~one of claims 3 to 5, characterized in that~~ claim 3, wherein the spatialization of the virtual source is performed by a binaural synthesis based on a linear breakdown of transfer functions, these transfer functions being expressed by a linear combination of terms dependent on the frequency of the sound ~~(L(f))~~ and weighted by terms dependent on the direction of the sound ~~(τ_R, τ_L, C, D)~~.

Claim 7 (currently amended): The method as claimed in claim 6, ~~characterized in that~~ wherein the direction is defined by at least one bias angle [[(θ)]] and, preferably, by a bias angle [[(θ)]] and an elevation angle [[(φ)]].

Claim 8 (currently amended): The method as claimed in ~~one of claims 6 and 7, characterized in that~~ claim 6, wherein the position of the virtual source is parameterized at least by:
- a number of filterings, dependent on the acoustic frequency ~~(L_i(f))~~,
- a number of weighting gains each associated with a filtering, and
- a delay for each "left" and "right" channel.

Claim 9 (currently amended): The method as claimed in ~~one of the preceding claims, characterized in that~~ claim 1, wherein the nature of the virtual source is parameterized by at least one acoustic timbre, by associating the chosen relative loudnesses with harmonics of a frequency corresponding to a pitch of the sound.

Claim 10 (currently amended): The method as claimed in ~~one of the preceding claims, characterized in that it~~ claim 1, wherein the method provides for an acoustic synthesis engine ~~specifically for generating~~ to generate spatialized sounds, relative to said predetermined origin.

Claim 11 (currently amended): The method as claimed in claim 10, in which the synthesis engine is implemented in a music editing context, ~~characterized in that~~ wherein the method also provides for a man-machine interface to place the virtual source in a chosen position relative to the predetermined origin.

Claim 12 (currently amended): The method as claimed in claim 11, ~~taken in combination with claim 6,~~ in which a plurality of virtual sources to be synthesized and spatialized are provided, ~~characterized in that~~ wherein each source is assigned to a respective position.

Claim 13 (currently amended): A module for generating synthetic sounds, comprising in particular a processor, ~~characterized in that~~ wherein it also includes a working memory ~~specifically~~ for storing instructions for implementing ~~the method as claimed in one of the preceding claims~~ an acoustic synthesis and spatialization method, in which a synthetic sound to be generated is characterized by the nature of a virtual acoustic source and its position relative to a chosen origin,
the method comprising a joint step of determining parameters including at least one gain, for defining, at the same time:
  - a loudness characterizing the nature of the source, and
  - the position of the source relative to a predetermined origin.

Claim 14 (currently amended): A computer program product, stored in a memory of a central processing unit or a terminal, in particular a mobile terminal, or on a removable medium specifically for cooperating with a drive of said central processing unit, ~~characterized in that it comprises instructions for implementing the method as claimed in one of claims 1 to 12~~ comprising instructions for implementing an acoustic synthesis and spatialization method, in which a synthetic sound to be generated is characterized by the nature of a virtual acoustic source and its position relative to a chosen origin,
the method comprising a joint step of determining parameters including at least one gain, for defining, at the same time:
  - a loudness characterizing the nature of the source, and
  - the position of the source relative to a predetermined origin.

Claim 15 (new): A communication terminal, including a module for generating synthetic sounds comprising a processor and a working memory for storing instructions for implementing an acoustic synthesis and spatialization method, in which a synthetic sound to be generated is characterized by the nature of a virtual acoustic source and its position relative to a chosen origin,

the method comprising a joint step of determining parameters including at least one gain, for defining, at the same time:

- a loudness characterizing the nature of the source, and
- the position of the source relative to a predetermined origin.